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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,563	06/19/2003	Lawrence C. Gunn III	LUX-P003	6066

7590 03/29/2004

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EXAMINER

ERDEM, FAZLI

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/600,563

Applicant(s)

GUNN ET AL.

Examiner

Fazli Erdem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6, 11, 22, 24, 28, 29, 34, 36, 37, 38, 39, 41, 42, 43 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 7-10, 12-21, 23, 25-27, 30-33, 35 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. Claims 2, 3, 5, 7-10, 12-21, 23, 25-27, 30-33, 35 and 40 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,4,6,11,22,24,28,29,34 and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (6,222,951) in view of Kovacic (5,793,913) further in view of Damask et al. (5,915,051).

Regarding Claims 1,4,6,11,22,24,28,29,34 and 38, Huang discloses a silicon-based silicon-germanium integrated-circuit optical network unit where an optical network unit that includes silicon-germanium electronic and optoelectronic devices and silicon-based very large scale integrated circuits monolithically integrated in the substrate. An optical branching circuit includes an optical coupler splits the incoming light from the fiber into two parts. One branch of the light is detected by a photodetector and subsequently amplified before sent to electronic circuit for down-loading data from the fiber network. Another branch of the light guided by optical waveguide is connected to a modulator. The modulator modulates the light of the second branch according to the electrical signal from the local electronic circuits. The splitter,

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photodetector, and optical modulator can be constructed in a single waveguide structure with electrical isolation between the detector and modulator. Huang fails to disclose the required core and cladding structures. However, Kovacic discloses a method for the hybrid integration of discrete elements on a semiconductor substrate where the required core structure is disclosed. Furthermore, Damask et al. disclose a wavelength-selective optical add/drop switch where the required cladding structure is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required core and cladding structures in Huang as taught by Kovacic and Damask et al. respectively in order to have a semiconductor device with higher performance.

3. Claims 36 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (6,222,951) in view of Damask et al. (5,915,051).

Regarding Claims 36 and 37, Huang discloses a silicon-based silicon-germanium integrated-circuit optical network unit where an optical network unit that includes silicon-germanium electronic and optoelectronic devices and silicon-based very large scale integrated circuits monolithically integrated in the substrate. An optical branching circuit includes an optical coupler splits the incoming light from the fiber into two parts. One branch of the light is detected by a photodetector and subsequently amplified before sent to electronic circuit for down-loading data from the fiber network. Another branch of the light guided by optical waveguide is connected to a modulator. The modulator modulates the light of the second branch according to the electrical signal from the local electronic circuits. The splitter, photodetector,

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and optical modulator can be constructed in a single waveguide structure with electrical isolation between the detector and modulator. Huang fails to disclose the required method of communication. However, Damask et al. disclose a wavelength-selective optical add/drop switch where the required communication method is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the communication method in Huang as taught by Damask et al. in order to have a semiconductor device with higher performance.

4. Claims 39 and 41 rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (6,222,951) in view of Kovacic (5,793,913) further in view of Damask et al. (5,915,051) further in view of Khan et al. (US 2003/0176075).

Regarding Claims 39 and 41, Huang discloses a silicon-based silicon-germanium integrated-circuit optical network unit where an optical network unit that includes silicon-germanium electronic and optoelectronic devices and silicon-based very large scale integrated circuits monolithically integrated in the substrate. An optical branching circuit includes an optical coupler splits the incoming light from the fiber into two parts. One branch of the light is detected by a photodetector and subsequently amplified before sent to electronic circuit for down-loading data from the fiber network. Another branch of the light guided by optical waveguide is connected to a modulator. The modulator modulates the light of the second branch according to the electrical signal from the local electronic circuits. The splitter, photodetector, and optical modulator can be constructed in a single waveguide structure with electrical isolation between the detector and modulator. Huang fails to disclose the required core, cladding, and

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data structures. However, Kovacic discloses a method for the hybrid integration of discrete elements on a semiconductor substrate where the required core structure is disclosed.

Furthermore, Damask et al. disclose a wavelength-selective optical add/drop switch where the required cladding structure is disclosed. Finally, Khan et al. disclose techniques for plasma etching silicon-germanium where the required data structure is disclosed.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required core, cladding and data structures in Huang as taught by Kovacic, Damask et al. and Khan et al. respectively in order to have a semiconductor device with higher performance.

5. Claims 42 and 43 rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (6,222,951) in view of Kovacic (5,793,913) further in view of Damask et al. (5,915,051) further in view of Patton (5,708,739)

Regarding Claims 42 and 43, Huang discloses a silicon-based silicon-germanium integrated-circuit optical network unit where an optical network unit that includes silicon-germanium electronic and optoelectronic devices and silicon-based very large scale integrated circuits monolithically integrated in the substrate. An optical branching circuit includes an optical coupler splits the incoming light from the fiber into two parts. One branch of the light is detected by a photodetector and subsequently amplified before sent to electronic circuit for down-loading data from the fiber network. Another branch of the light guided by optical waveguide is connected to a modulator. The modulator modulates the light of the second branch according to the electrical signal from the local electronic circuits. The splitter, photodetector,

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and optical modulator can be constructed in a single waveguide structure with electrical isolation between the detector and modulator. Huang fails to disclose the required core, cladding, and mask structures. However, Kovacic discloses a method for the hybrid integration of discrete elements on a semiconductor substrate where the required core structure is disclosed. Furthermore, Damask et al. disclose a wavelength-selective optical add/drop switch where the required cladding structure is disclosed. Finally, Patton discloses method and apparatus for protableaching patterns in irradiated optical waveguides where the required mask structure is disclosed..

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required core, cladding and mask structures in Huang as taught by Kovacic, Damask et al. and Patton respectively in order to have a semiconductor device with higher performance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
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March 12, 2004